CLAIMS

1 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°.

2 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the viscosity is within the range of 1 cps to 20 cps.

3 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the surface tension is within the range of 20 dyne/cm to 70 dyne/cm.

4 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, and the viscosity is within the range of 1 cps to 20 cps.

5 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the viscosity is within the range of 1 cps to 20 cps, and the surface tension is within the range of 20 dyne/cm to 70 dyne/cm.

6 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the surface tension is within the range of 20 dyne/cm to 70 dyne/cm, and the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°.

7 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, the viscosity is within the range of 1 cps to 20 cps, and the surface tension is within the range of 20 dyne/cm to 70 dyne/cm.

8 The composition for a hole injecting and transporting layer according to any of Claims 1 through 7, wherein the conductive compound is either a high-molecular weight material or a low-molecular weight material.

9 The composition for a hole injecting and transporting layer according to any of Claims 1 through 8, wherein the concentration of the conductive compound is in the range of 0.01 wt% to 10 wt%.

10 The composition for a hole injecting and transporting layer according to any of Claims 1 through 9, wherein the conductive compound is present in a dissolved or dispersed state in a polar solvent as the solvent.

11 The composition for a hole injecting and transporting layer according to Claim 10, wherein the polar solvent is a mixed solvent of water and a lower alcohol.

12 The composition for a hole injecting and transporting layer according to Claim 11, wherein the lower alcohol is methanol or ethanol.

13 The composition for a hole injecting and transporting layer according to Claim 10, wherein the polar solvent is a mixed solvent of water and a Cellosolve solvent.

14 The composition for a hole injecting and transporting layer according to Claim 13, wherein the Cellosolve solvent is ethoxy ethanol.

15 The composition for a hole injecting and transporting layer according to any of Claims 1 through 14, wherein the composition comprises a lubricant.

16 The composition for a hole injecting and transporting layer according to Claim 15, wherein the lubricant is glycerin.

17 A manufacturing process for the composition for a hole injecting and transporting layer according to any of Claims 1 through 16, comprising:

a sonication step; and

a filtration step.

18 A manufacturing process for an organic EL element having a stacked structure of a hole injecting and transporting layer and a light-emitting layer formed

within a partitioning member divided into individual pixel areas, comprising:

a step wherein a partitioning member provided with openings corresponding to pixel areas is formed on a substrate;

a step wherein an ink-jet type recording head is used to fill the aforementioned openings with the composition for a hole injecting and transporting layer according to any of Claims 1 through 17; and

a step wherein the composition for a hole injecting and transporting layer that has filled the openings is subjected to a drying process to form a hole injecting and transporting layer.

19 An organic EL element manufactured by the manufacturing process according to Claim 18.

20 An organic EL element manufactured by the manufacturing process according to Claim 18, wherein the film thickness of the hole injecting and transporting layer is 0.1 μm or less.

21 An organic EL element manufactured by the manufacturing process according to Claim 18, wherein the film resistance of the hole injecting and transporting layer is in the range $0.5 \times 10^3 \Omega/m^2$ to $5 \times 10^9 \Omega/m^2$.

AMENDED CLAIMS

1 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

2 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the viscosity is within the range of 1 cps to 20 cps, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

3 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting

and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the surface tension is within the range of 20 dyne/cm to 70 dyne/cm, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

4 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, the viscosity is within the range of 1 cps to 20 cps, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

5 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the viscosity is within the range of 1 cps to 20 cps, the surface tension is within the range of 20 dyne/cm to 70 dyne/cm, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

6 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the surface tension is within the range of 20 dyne/cm to 70 dyne/cm, the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

7 A composition for a hole injecting and transporting layer for use in patterning formation of a hole injecting and transporting layer of an organic EL element using an ink-jet type recording head, comprising:

a conductive compound; and

a solvent;

wherein the viscosity is within the range of 1 cps to 20 cps, the surface tension is within the range of 20 dyne/cm to 70 dyne/cm, the contact angle with respect to the material making up the ink discharge nozzle face of the ink-jet type recording head is within the range of 30° to 170°, and the content of the conductive compound is in the range of 0.01 wt% to 10 wt%.

8 The composition for a hole injecting and transporting layer according to any of Claims 1 through 7, wherein the conductive compound is either a high-molecular weight material or a low-molecular weight material.

9 The composition for a hole injecting and transporting layer according to any of Claims 1 through 8, wherein the conductive compound is present in a dissolved or dispersed state in the solvent as a polar solvent.

10 The composition for a hole injecting and transporting layer according to Claim 9, wherein the polar solvent is a mixed solvent of water and a lower alcohol.

11 The composition for a hole injecting and transporting layer according to Claim 10, wherein the lower alcohol is methanol or ethanol.

12 The composition for a hole injecting and transporting layer according to Claim 9, wherein the polar solvent is a mixed solvent of water and a Cellosolve solvent.

13 The composition for a hole injecting and transporting layer according to Claim 12, wherein the Cellosolve solvent is ethoxy ethanol.

14 The composition for a hole injecting and transporting layer according to any of Claims 1 through 13, further comprising a lubricant.

15 The composition for a hole injecting and transporting layer according to Claim 14, wherein the lubricant is glycerin.

16 A manufacturing process for the composition for a hole injecting and transporting layer according to any of Claims 1 through 15, comprising.

a sonication step; and

a filtration step.

17 A manufacturing process for an organic EL element having a stacked structure of a hole injecting and transporting layer and a light-emitting layer formed within a partitioning member divided into individual pixel areas, comprising:

a step wherein a partitioning member provided with openings corresponding to pixel areas is formed on a substrate;

a step wherein an ink-jet type recording head is used to fill the aforementioned openings with the composition for a hole injecting and transporting layer according to any of Claims 1 through 16; and

a step wherein the composition for a hole injecting and transporting layer that has filled the openings is subjected to a drying process to form a hole injecting and transporting layer.

18 An organic EL element manufactured by the manufacturing process according to Claim 17.

19 An organic EL element manufactured by the manufacturing process according to Claim 17, wherein the film thickness of the hole injecting and transporting layer is 0.1 μm or less.

20 An organic EL element manufactured by the manufacturing process according to Claim 17, wherein the film resistance of the hole injecting and transporting layer is in the range 0.5×10^9 Ω/m^2 to 5×10^9 Ω/m^2.